

**Keystone Exam... Practice Test # 5****Part 1 – Multiple Choice**

\_\_\_\_\_ 1) Write a function rule that gives the total cost  $c(p)$  of  $p$  pounds of sugar if each pound costs \$0.59.

A)  $c(p) = 59p$

B)  $c(p) = p + 0.59$

C)  $c(p) = \frac{p}{0.59}$

D)  $c(p) = 0.59p$

\_\_\_\_\_ 2) What is the value of  $5\sqrt{3} - \sqrt{75}$  ?

A) 0

B)  $10\sqrt{3}$

C)  $-20\sqrt{3}$

D) cannot be subtracted

\_\_\_\_\_ 3) What is the solution for the two algebraic equations below?

$$3x - 2y = 25$$

$$5y = 2x - 24$$

A)  $(7, -2)$

B)  $(-2, 7)$

C)  $(17, 2)$

D)  $(1, -11)$

\_\_\_\_\_ 4) Which is the correct way to factor the polynomial  $x^2 - 16$  ?

A)  $(x - 4)^2$

B)  $(x - 4)(x + 4)$

C)  $(x + 4)(x - 2)(x - 2)$

D) not factorable

\_\_\_\_\_ 5) Ashley is pricing shirts using the function  $P(w) = 1.72w + 1.80$ . What price ( $P$ ) should she put on a shirt having a wholesale cost of ( $w$ ) of \$6.50?

A) \$2.00

B) \$11.18

C) \$12.98

D) \$14.28

\_\_\_\_\_ 6) Melissa has \$790 in savings. She wants to purchase a new computer for \$1,750. She plans to add \$20 each week to her savings. How many weeks will Melissa need to add to her savings before she can purchase the new computer?

A) 40

B) 48

C) 88

D) 127

\_\_\_\_\_ 7) A batter hits a ball directly upward with an initial velocity of 96 ft per second. The equation  $h(t) = vt - 16t^2$  represents vertical motion that is only affected by gravity. The height the ball travels is represented by  $h$ , the initial velocity of the ball is  $v$ , and  $t$  is the time. How high is the ball after 3 seconds?

A) 144 ft

B) 240 ft

C) 272 ft

D) 432 ft

\_\_\_\_\_ 8) Use the laws of exponents to evaluate  $\left(\frac{1}{x}\right)^{-n}$  when  $x = 7$  and  $n = 2$ .

A)  $\frac{1}{49}$

B)  $\frac{1}{7}$

C) 7

D) 49

\_\_\_\_\_ 9) What property is illustrated by the statement below?

$$7 + (4 + 4) = (7 + 4) + 4$$

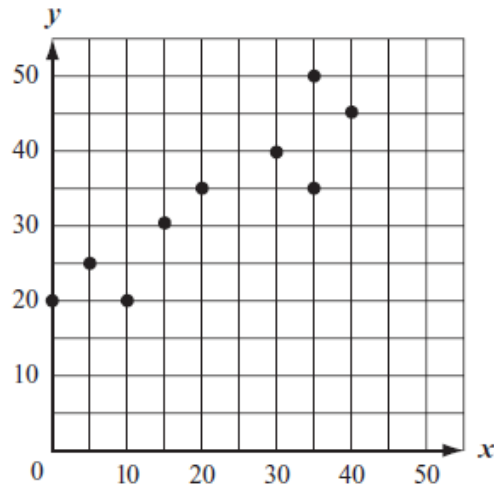
A) Inverse Property of Addition

B) Associative Property of Addition

C) Commutative Property of Multiplication

D) Commutative Property of Addition

\_\_\_\_\_ 10) Which of the following equations best represents the line of best fit for the scatterplot below?



A)  $y = \frac{2}{3}x + 20$

B)  $y = \frac{3}{2}x + 20$

C)  $y = -\frac{2}{3}x + 20$

D)  $y = -\frac{3}{2}x + 20$

\_\_\_\_\_ 11) This table represents how a group of elementary students in a school in Boston get to school.

| Mode of Transportation | Number of Elementary Students |
|------------------------|-------------------------------|
| Bus                    | 28                            |
| Subway                 | 20                            |
| Car                    | 16                            |
| Foot                   | 11                            |

Of 5,000 elementary students in Boston, what is the best estimate of the number of students who will ride the bus to school?

A) 1,150

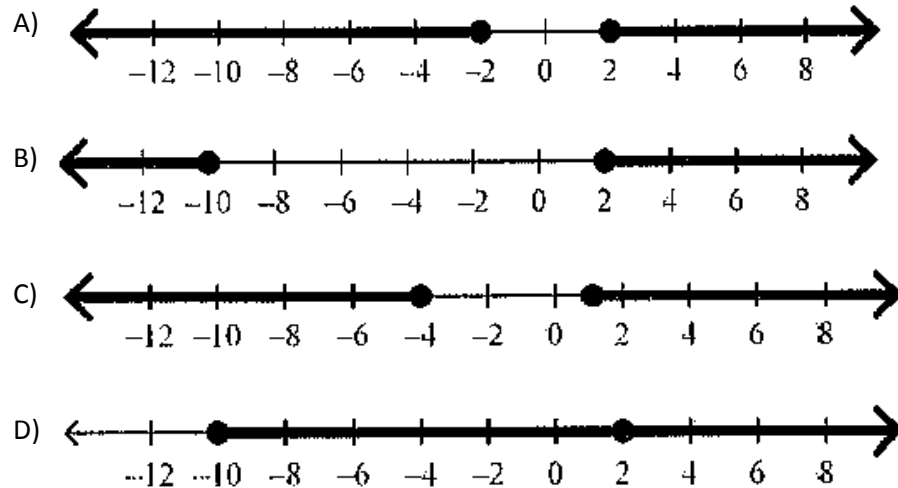
B) 1,600

C) 1,750

D) 1,850

\_\_\_\_\_ 12) What is the appropriate graph of the solution set of the compound inequality shown below?

$$\frac{2x-1}{3} + 3 \leq -4 \quad \text{or} \quad \frac{-8x+8}{2} - 1 \leq -5$$



\_\_\_\_\_ 13) At an ice-cream parlor, ice cream cones cost \$1.10 and sundaes cost \$2.35. One day, the receipts for a total of 172 cones and sundaes were \$294.20. The system of equations shown below represents this situation.

$$\begin{aligned} x + y &= 172 \\ 1.10x + 2.35y &= 294.20 \end{aligned}$$

Which statement is true?

- A) There were four more sundaes sold than ice-cream cones.
- B) More cones than sundaes were sold.
- C) Eighty-four cones were sold
- D) There were two more cones sold than sundaes.

\_\_\_\_\_ 14) What is the sum of the mean, median, and mode(s) of the set of numbers below.

2 , 4 , 8 , 7 , 4 , 6 , 8 , 9

- A) 12.5
- B) 16.5
- C) 20.5
- D) 24.5

- \_\_\_\_\_ 15) Ryan Howard works at WaySub sandwich shop. Each customer is charged the initial cost of the sandwich plus an additional cost for each extra topping requested. This is shown in the equation below.

$$s = 0.75t + 6.50$$

What does the number 6.50 represent in this equation?

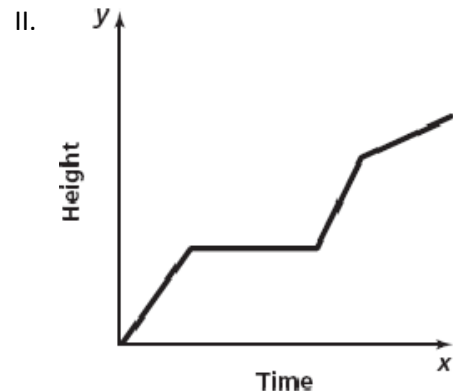
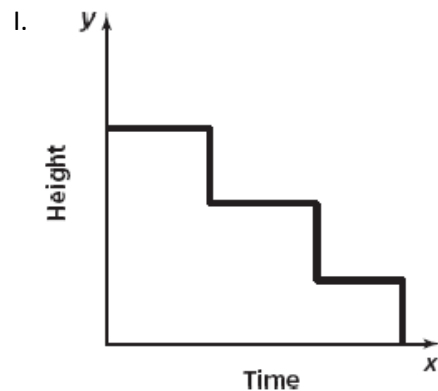
- A) the number of toppings
- B) the cost of one sandwich with no toppings
- C) the cost of a hot dog with one topping
- D) the cost of each topping

- \_\_\_\_\_ 16) Simplify the rational expression below. State any restrictions on the variable.

$$\frac{q^2 - 3q - 10}{q^2 + 6q + 8}$$

- A)  $\frac{q+4}{q-5}$  ;  $q \neq -2, 5$
- B)  $\frac{q-5}{q+4}$  ;  $q \neq -4, -2$
- C)  $\frac{q+5}{q+5}$  ;  $q \neq -4, -2$
- D)  $\frac{q-1}{q+2}$  ;  $q \neq -3, -2$

- \_\_\_\_\_ 17) Identify whether the relation between the domain (time) and range (height) is or is NOT a function.



- A) I is a function, II is not a function
- B) I is not a function, b is a function
- C) Both I and II are functions
- D) Neither I or II are functions

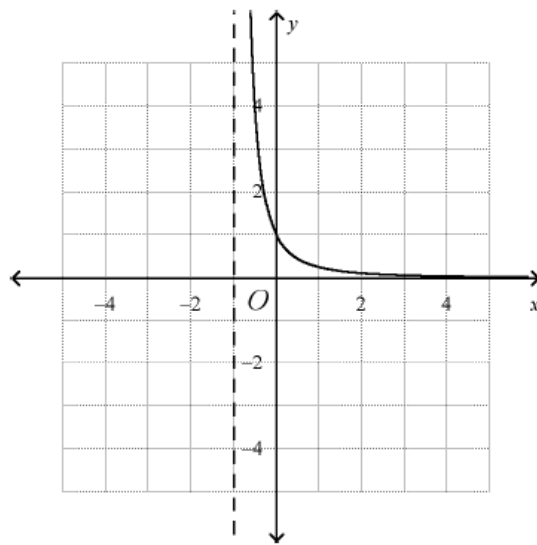
- \_\_\_\_\_ 18) Jack owns a surfing store on the Ocean City, NJ boardwalk. He charges a set price for the surfboard rental plus an additional charge for each hour. This is modeled by the equation below.

$$y = 45.00 + 10.75x$$

What does “y” represent in this equation?

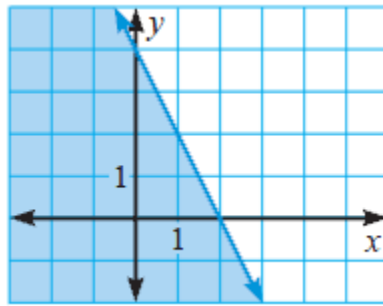
- A) the cost for the surfboard rental itself
- B) the number of hours a customer rented a surfboard
- C) the cost for the surfboard rental for one hour
- D) the cost of renting the surfboard for a given number of hours

- \_\_\_\_\_ 19) Find the domain and range of the relation and determine whether it is a function.



- A) Domain: {positive integers} ; Range: {positive integers} ; No it is not a function.
- B) Domain:  $\{x > -1\}$  ; Range:  $\{y > 0\}$  ; Yes it is a function.
- C) Domain: {all real numbers} ; Range: {all real numbers} ; Yes it is a function.
- D) Domain:  $\{x \geq 0\}$  ; Range:  $\{y > -1\}$  ; Not is not a function.

\_\_\_\_\_ 20) Which inequality is represented by the graph shown below?



A)  $-2x + y \geq 4$

B)  $2x + y \leq 4$

C)  $y \leq \frac{1}{2}x + 4$

D)  $2x + y > 4$

\_\_\_\_\_ 21) If  $-2x^2 + 3x - 9$  is subtracted from  $-6x + 4x^2 + 9$ , the result is:

A)  $6x^2 - 3x$

B)  $2x^2 - 9x + 18$

C)  $6x^2 - 9x + 18$

D)  $2x^2 - 3x$

\_\_\_\_\_ 22) The table below shows the height of a slowly descending air balloon over time. Let  $h$  stand for the height in feet and let  $t$  stand for the time in minutes. Which equation best models the data?

| Time (minutes) | Height (feet) |
|----------------|---------------|
| 10             | 234           |
| 20             | 218           |
| 40             | 186           |
| 60             | 154           |

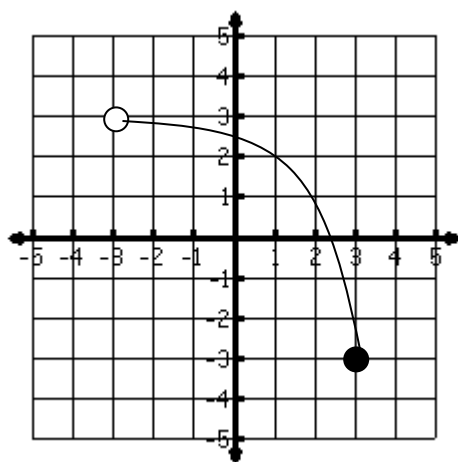
A)  $h = 250t - 1.6$

B)  $h = -1.6t + 250$

C)  $h = -1.6t + 234$

D)  $t = 10h + 234$

\_\_\_\_\_ 23) Which value is NOT in the range of the function graphed below?



A) -3

B) 3

C) 0

D) -2



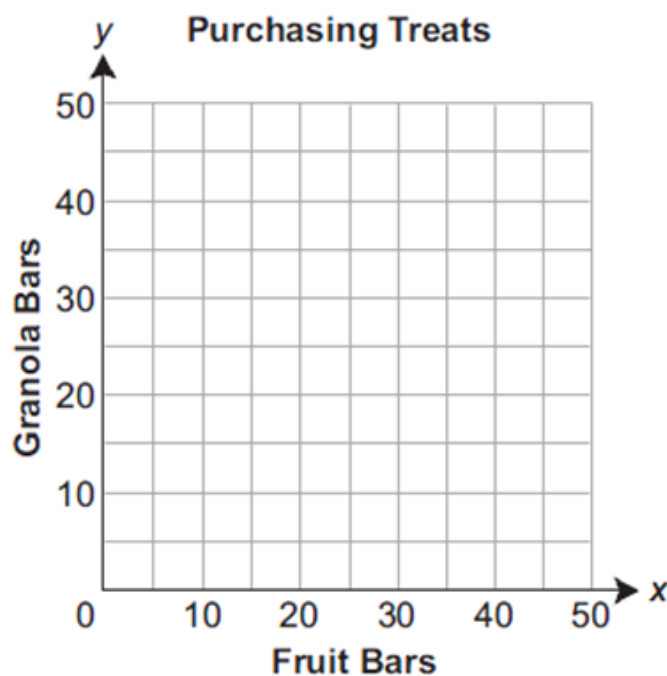
**Part 2 – Constructed Response**

- 24) Georgia is purchasing treats for her classmates. Georgia can spend exactly \$10.00 to purchase 25 fruit bars, each equal in price. Georgia can also spend exactly \$10.00 to purchase 40 granola bars, each equal in price.

- A) Write an equation which can be used to find all combinations of fruit bars ( $x$ ) and granola bars ( $y$ ) that will cost exactly \$10.00.

Equation: \_\_\_\_\_

- B) Graph the equation from **part A** below.



C) What is the slope of the line graphed in **part B** ?

Slope: \_\_\_\_\_

D) Explain what the slope from **part C** means in the context of Georgia purchasing treats.

Explanation:

- 25) Nolan has \$15.00, and he earns \$6.00 an hour babysitting. The equation below can be used to determine how much money in dollars ( $m$ ) Nolan has after any number of hours of babysitting ( $h$ ).

$$m = 6h + 15$$

- A) After how many hours of babysitting will Nolan have \$51.00?

Hours: \_\_\_\_\_

- B) Claire has \$9.00. She makes \$8.00 an hour babysitting.

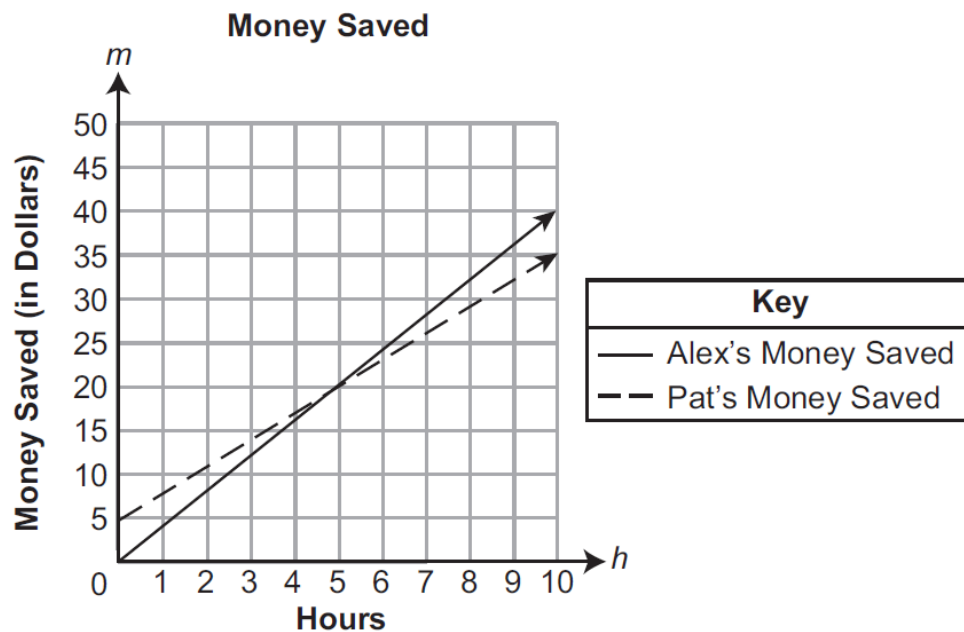
Use the system of linear equations below to find the number of hours of babysitting after which Nolan and Claire will have the same amount of money.

$$m = 6h + 15$$

$$m = 8h + 9$$

Hours: \_\_\_\_\_

- C) The graph below displays the amount of money Alex and Pat will each have saved after their hours of babysitting.



Based on the graph, for what domain ( $h$ ) will Alex have more money saved than Pat? Explain your reasoning.

Explanation:

Domain: \_\_\_\_\_

- 26) Last summer Ben purchased materials to build model airplanes and then sold the finished models. He sold each model for the same amount of money. The table below shows the relationship between the number of model airplanes sold and the running total of Ben's profit.

| Model Airplanes Sold | Total Profit |
|----------------------|--------------|
| 12                   | \$68         |
| 15                   | \$140        |
| 20                   | \$260        |
| 22                   | \$308        |

- A) Write a linear equation, in slope-intercept form, to represent the amount of Ben's total profit ( $y$ ) based on the number of model airplanes ( $x$ ) he sold.

Equation: \_\_\_\_\_

- B) How much did Ben spend on his model-building materials?

Money: \_\_\_\_\_

C) What is the fewest number of model airplanes Ben needed to sell in order to make a profit?

Airplanes: \_\_\_\_\_

D) What is a reasonable value in the range that would be a negative number?

Range: \_\_\_\_\_

- 27) The weight (in pounds) of each wrestler on the high school wrestling team at the beginning of the season is listed below.

178 142 112 150 206 130

A) What is the median weight of the wrestlers?

Median: \_\_\_\_\_

B) What is the mean weight of the wrestlers?

Mean: \_\_\_\_\_

Two more wrestlers join the team during the season. The addition of these wrestlers has no effect on the mean weight of the wrestlers, but the median weight of the wrestlers increases 3 pounds.

C) Determine the weights of the two new wrestlers.

New Wrestler 1: \_\_\_\_\_

New Wrestler 2: \_\_\_\_\_